

### **Remarks/Arguments**

Claims 1-18 were pending in the present application, and are canceled herewith and replaced with new claims 19-38. New independent claim 19 corresponds with a combination of former claims 1, 10, and 11; new independent claim 31 corresponds with a combination of former claims 1 and 16; and new independent claim 38 corresponds with a combination of former claims 1, 7, 8, and 9. The various claims depending from independent claims 19 and 31 each correspond with a former dependent claim, or a combination thereof. Applicants' attorney has chosen this amendment format as being the most expeditious in advancing the prosecution of the application.

Enclosed herewith is a copy of U. S. Patent 6,393,331 (the '331 patent) that issued from USSN 09/212,922 referred to in the IDS filed with the parent application USSN 09/469,147. This copy is in response to the Examiner's request in the 2/5/03 OA for such copy.

It will be noted that most of the original claims in the present application, and more particularly new independent claims 19 and 31 submitted herewith, are very similar to claims 1, 14, and others of the '331 patent. They differ principally in the fact that the method of the '331 patent was for creating a model of an outer air seal for a gas turbine engine, whereas the method of the present invention is for creating a model of a low pressure compressor rotor for a gas turbine engine.

Because of the similarities between the claims of the present application and the '331 patent, both of which are assigned to United Technologies Corporation, it is deemed appropriate to file a terminal disclaimer in the present application, limiting the term of any resulting patent to the term of the '331 patent. Such terminal disclaimer is submitted herewith, with the appropriate fee, to obviate any possible obviousness double patenting rejection. Moreover, it should be noted that the invention of the present application was under obligation to be and was, assigned to the same assignee, United Technologies Corporation, as the '331 patent.

Common to each of the three new independent claims 19, 31, and 38 is the method of former claim 1 for creating a model of a low-pressure compressor rotor for a gas turbine engine. Each claim includes the steps of creating a knowledge base of information having a plurality of rules with respect to a corresponding plurality of parameters of associated elements of the rotor, with one or more data values for each of the rules; entering a desired data value for a selected one of the plurality of parameters of an associated element of the rotor; comparing the entered desired data value with the corresponding one or more data values in the knowledge base for the corresponding rule; and if the result of the comparison is such that the entered desired data value of the selected parameter is determined to have a first predetermined relationship with respect to corresponding one or more data values in the knowledge base for the selected rule, then creating a geometric representation of the selected one of the parameters of the rotor element.

While both of the Marra articles ( $M_1$  = An Expert System Eases Rotor Design;  $M_2$  = Use of Knowledge-Based Engineering in Compressor Rotor Design) are concerned with the use of a knowledge base to facilitate the design of a compressor rotor for a gas turbine engine, it is respectfully submitted that those articles do not address the method of the invention with the specificity of the disclosure and claims of the present application.

Further, to advance the prosecution of the present application, applicants have further limited the recitation of the fundamental method of the invention (previously recited in claim 1) by the claim language of new independent claims 19, 31, and 38. Claim 19 adds the limitations of prior dependent claims 10 and 11, to wit, the step of analyzing the created geometric representation of the selected parameter of the rotor element, which further comprises the step of performing a durability analysis on the created geometric representation. Claim 31 adds the limitation of prior dependent claim 16, to wit, the provision of a further step of providing a file listing of a selected one or more of the plurality of parameters of the rotor element(s), and wherein the file listing includes at least one of the entered desired data values for each one of the corresponding plurality of parameters of the rotor elements. Claim 33, which depends from claim 31,

provides that file listing as an input to a computer program for controlling parametric models of the design of the tooling for the manufacture of the rotor. Claim 38 adds the limitations of prior dependent claims 7, 8, and 9, to wit, that the rotor elements include a plurality of axially spaced rings that include spacer means for connecting and establishing the spacing between successive rings, the successive rings being connected by welds in successive spacer means, the spacer means between successive rings include a knife edge member, and the knowledge base includes rules for sizing the rings and for the placement of the welds relative to the knife edge members.

Applicants fail to find the disclosures and/or teachings of the M1 and M2 articles to be as specific as the claimed invention. Indeed, while the articles reveal progressive thinking in the design of rotor parts, it is respectfully submitted that they do not provide the thoroughness required for one to practice the claimed invention without undue further experimentation and development.

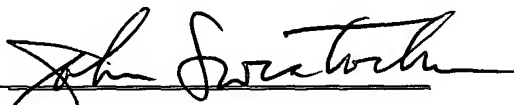
In the 2/5/03 OA, the Examiner chose to further rely upon "Official Notice" and/or the Kienzle et al reference (U. S. 5,297,054) to supplement such deficiencies. The reliance upon Official Notice was for the purpose of "bridging" the absence of specific teachings of various claimed specifics of rotor design, presumably as now appear in independent claim 38, as well as dependent claims 25 and 34. Applicants respectfully submit that the Examiner has postulated the well-known existence of these techniques and features in the prior art and usage, but has not provided convincing evidence of that. Moreover, while the Kienzle et al reference is indeed concerned with an expert system that employs knowledge-based techniques to automatically generate gearset designs, it does not appear to either disclose or suggest the specific steps of new claims 19, 31, and 38 that are concerned with the design of a low-pressure compressor rotor for a gas turbine engine. The Examiner states in the OA of 2/5/03 that "Kienzle et al discloses application of expert systems to turbine engines", yet that reference is focused on the designs of gears that may be used in various different applications, with the mention of use in turbine engines being only incidental and certainly not a disclosure of the design of a low pressure compressor rotor for a gas turbine engine.

In view of the substantial amendments to all of the claims, the submission of the terminal disclaimer, and the accompanying "Remarks" above, it is respectfully submitted that the new claims submitted herewith do patentably distinguish over the prior art. Accordingly, favorable consideration and an indication of allowability/allowance are respectfully solicited. If the Examiner feels the prosecution of the application may be advanced by telephone discussion, Applicant's attorney, John Swiatocha, may be contacted at (860) 565-5106.

Respectfully submitted,

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